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Letter dated 19 June 2018 from the Secretary-General addressed to the President of the Security Council

I have the honour to transmit herewith a communication, dated 13 June 2018, which I received from the Director General of the Organisation for the Prohibition of Chemical Weapons (OPCW) (see annex). The letter transmits the note by the OPCW Technical Secretariat on the report of the OPCW fact-finding mission in the Syrian Arab Republic regarding alleged incidents in Ltamenah, Syrian Arab Republic, on 24 and 25 March 2017.

I should be grateful if you would bring the present letter and its annex to the attention of the members of the Security Council.

(*Signed*) António **Guterres**

18-10196 (E) 220618

Please recycle

Annex

[Original: Arabic, Chinese, English, French, Russian and Spanish]

I have the honour to transmit to you the note by the Technical Secretariat entitled "Report of the OPCW Fact-Finding Mission in Syria regarding alleged incidents in Ltamenah, Syrian Arab Republic, 24 and 25 March 2017" (see enclosure).

(*Signed*) Ahmet **Üzümcü**

Enclosure

[Original: Arabic, Chinese, English, French, Russian and Spanish]

NOTE BY THE TECHNICAL SECRETARIAT

REPORT OF THE OPCW FACT-FINDING MISSION IN SYRIA REGARDING ALLEGED INCIDENTS IN LTAMENAH, THE SYRIAN ARAB REPUBLIC 24 AND 25 MARCH 2017

1. SUMMARY

1.1 This report covers the work of the OPCW Fact-Finding Mission (FFM) in relation to two allegations in the area of Ltamenah, Hama Governorate on 24 and 25 March, respectively.

1.2 After the FFM became aware of allegations of use of a toxic chemical as a weapon in Ltamenah, in the Hama Governorate, the team assessed the credibility of the allegations based on information collected from open sources and information received from several non-governmental organisations (NGOs).

1.3 During the FFM deployment to gather facts related to the use of chemicals as a weapon in Khan Shaykhun on 4 April 2017, the team also received samples and conducted interviews related to the incident on 25 March 2017 and during these interviews, encountered allegations of use of a toxic chemical as a weapon in another part of Ltamenah on 24 March 2017.

1.4 For both incidents (24 and 25 March), the FFM interviewed a variety of witnesses including health workers, witnesses, first responders, and casualties. The team received environmental samples collected from the sites of the incidents.

1.5 The conclusions for both allegations were derived from the analysis of interviews, supporting material submitted during the interview process, analysis of environmental samples, and subsequent cross-reference and corroboration of the evidence.

24 March 2017

1.6 Whilst the collection of facts relating to the 25 and 30 March (S/1548/2017, dated 2 November 2017) incidents was ongoing, the team also identified witnesses in relation to the alleged incident on 24 March 2017, in Ltamenah. The interview process for the 24 March 2017 incident started at the end of July 2017.

1.7 Once the impact locations of the incident on 24 March 2017 were determined during the interviews, the FFM coordinated the sample collection from these locations with an NGO.

1.8 The FFM concluded that sarin was very likely used as a chemical weapon in the south of Ltamenah on 24 March 2017.

25 March 2017

1.9 The alleged incident of 25 March was widely reported in the media as targeting an area where an operating field hospital was located and in which one "barrel" cylinder fell inside the main entrance hall of the hospital and a doctor lost his life.

1.10 The FFM determined that chlorine was released from cylinders through mechanical impact. The FFM concluded that chlorine was very likely used as a chemical weapon at Ltamenah Hospital and the surrounding area on 25 March 2017.

2. LEGAL FRAMEWORK

2.1 The FFM was set up in May 2014 "to establish facts surrounding allegations of the use of toxic chemicals, reportedly chlorine, for hostile purposes in the Syrian Arab Republic" on the basis of the Director-General's authority under the Chemical Weapons Convention (hereinafter "the Convention") to seek to uphold at all times the object and purpose of the Convention, as reinforced by the relevant decisions of the OPCW Executive Council (hereinafter "the Council").

2.2 The terms of reference of the FFM were mutually agreed upon by the OPCW and the Syrian Arab Republic through the exchange of letters between the OPCW Director-General and the Government of the Syrian Arab Republic, dated 1 and 10 May 2014, respectively (Annex to the Note by the Technical Secretariat S/1255/2015, dated 10 March 2015).

2.3 The continuation of the FFM was subsequently endorsed by the Council in decision EC-M-48/DEC.1, dated 4 February 2015, as recalled by United Nations Security Council resolution 2209 (2015), and subsequently decision EC-M-50/DEC.1, dated 23 November 2015. Both of these Council decisions and resolution 2209 (2015) require the FFM to study all available information relating to allegations of the use of chemical weapons in the Syrian Arab Republic, including that provided by the Syrian Arab Republic and by others.

3. METHODOLOGY

3.1 The FFM followed the same methodology developed in previous missions. This methodology has been comprehensively described in previous reports and therefore will not be repeated in detail here.

3.2 Whilst the overarching methodology has been consistently applied in establishing facts related to the use of chemicals as weapons in Syria, there is a unique set of circumstances presented by each allegation. These circumstances include access to physical evidence, electronic evidence, witnesses, and documentation, in addition to evaluating the time lag between the alleged incident and access. As such, the differing circumstances of each alleged incident assign lesser or greater relevance to the various components of the detailed methodology.

3.3 In particular, the evidentiary value of samples taken mostly close to the time of the alleged incident and supported by photographic and video evidence and in association with witness testimony was balanced against the evidentiary value of the FFM's visit to the site some time later to collect its own samples.

3.4 Accordingly, the FFM reviewed and compared the methodology in S/1318/2015.Rev.1 (dated 17 December 2015) and Add.1 (dated 29 February 2016), S/1319/2015 and S/1320/2015 (both dated 29 October 2015), S/1444/2016 (dated 21 December 2016), S/1491/2017 (dated 1 May 2017), S/1510/2017 (dated 29 June 2017), S/1548/2017 (dated 2 November 2017) and S/1626/18 (dated 15 May 2018) to ensure that, with respect to previous allegations, the application of the investigative approach was consistent.

3.5 To reach its conclusions, the FFM looked at the combination, consistency, and corroboration of evidence gathered in its entirety.

3.6 Reference documentation is listed in Annex 1.

4. DEPLOYMENT DETAILS AND CHRONOLOGY

Pre-deployment

4.1 After an incident was reported in the media concerning alleged use of chlorine that hit a field hospital in Ltamenah on 25 March 2017, the team conducted further open-source research and commenced the collection and review of all relevant information about the allegation. The majority of sources consisted, at an initial stage, of news media and the websites of various NGOs (Annex 2).

4.2 Subsequently, the FFM obtained further information from NGOs and expanded its search for potential interviewees and evidence regarding this allegation. Active monitoring of the media by the Information Cell and the FFM continued.

4.3 During this pre-deployment phase, the FFM was mobilised on 5 April 2017 (as detailed in S/1497/2017, S/1510/2017, and S/1548/2017) concerning the use of a chemical weapon in Khan Shaykhun on 4 April 2017. Whilst the team concentrated on this incident, additional information also became available about other allegations.

4.4 In light of the information revealed during the interviews on the potential use of a chemical as a weapon in Ltamenah on 24 March 2017, the FFM team further expanded its search for potential interviewees and possible evidence to include this alleged incident as well.

4.5 The FFM noted that during an investigation, complete, direct, and immediate access to the site of an alleged incident provides the greatest opportunity to collect information. As with all the allegations and incidents referenced in previous reports of the FFM (see paragraph 3.4 above), various constraints, mainly related to security, have not enabled immediate access to sites by the FFM.

4.6 Given that those constraints prevented a team deployment to the location of the alleged incident, the FFM determined that the principal methods for collecting and evaluating the credibility of information include the following: examination of existing reports; assessment and corroboration of background information; conduct of interviews with relevant medical care providers, alleged casualties, and other individuals linked to the reported incident; review of documentation and records provided by interviewees; analysis of the signs and symptoms of casualties as reported by interviewees; and receipt of environmental samples, for subsequent analysis.

4.7 The FFM team identified relevant witnesses through face-to-face interviews or teleconference calls, open-source research, medical records provided to the team, and through interaction with NGOs. Access to witnesses was coordinated with NGOs.

4.8 In addition to liaising with representatives of several NGOs, including but not limited to the Same Justice Chemical Violations Documentation Centre in Syria (CVDCS) and the Syrian Civil Defence (SCD), also known as White Helmets, the FFM also contacted witnesses and confirmed their willingness to provide testimony and potential evidence. Furthermore, the FFM coordinated with the NGOs to organise the movement of the witnesses.

Deployment activities

4.9 The FFM held its first interview on 10 April 2017, concerning an alleged incident in the area of Ltamenah on 25 March 2017. Throughout the interviews, including those relating to Ltamenah on 30 March 2017 and Khan Shaykhun on 4 April 2017, additional allegations were raised by the interviewees. These included allegations of an incident on 24 March (in Ltamenah, Khattab, and Qomhane) and on 3 April (in Hobait and Al-Tamanah); all in 2017.

4.10 Subsequently, the FFM began collecting information on the alleged incident on 24 March 2017. Based on the statements of the interviewees, the FFM identified witnesses and contacted NGOs for coordination.

4.11 During the first interview on 10 April 2017, the FFM received environmental samples relating to the alleged incident of 25 March 2017 from the interviewee. Further environmental samples were provided on 12 April 2017 and 19 February 2018 by an NGO.

4.12 Based on information supplied during interviews, the FFM identified munition parts that were of potential interest in relation to the alleged incident of 24 March 2017 and arranged for their collection by an NGO. As a result, further environmental samples and remnants of alleged munition parts were received by the FFM team on 19 February 2018.

4.13 From the moment of their receipt by the team, all samples were handled in accordance with applicable OPCW procedures, including the application of seals by the FFM team. The samples relating to the 24 March 2017 and 25 March 2017 incidents were analysed by two designated laboratories (DLs). The results are presented in Section 5 below.

5. INCIDENT SUMMARY AND ANALYSIS

5.1 The following narratives are derived solely from interviews and, where possible, corroborated by different interviewees and evidence gathered by the team.

5.2 For reporting purposes, facilities that provide medical treatment are generically referred to as medical facilities. These include established major hospitals, smaller specialist hospitals, field hospitals, and basic medical centres that offer little more than first aid.

5.3 Owing to concerns raised by some of the witnesses, medical facilities—aside from those mentioned specifically herein—are not individually identified in this report. For ease of reporting, they have been assigned individual codes except for the specific medical facility that was directly related to the allegation (Ltamenah Hospital).

Ltamenah

5.4 Ltamenah is a village in the district of Mahardah within the Hama Governorate of the Syrian Arab Republic. It is located approximately 40 km northwest of Hama City, 70 km south of Idlib City and roughly 15 km to the south of Khan Shaykhun. Prior to the conflict (based on figures from the 2004 census), the population of the village and the surrounding area was approximately 16,000.

5.5 Software from http://en-ca.topographic-map.com/ was used in conjunction with Google Maps to produce the topography of Ltamenah and the surrounding area, as shown in Figure 1 below.

FIGURE 1: TOPOGRAPHY OF LTAMENAH AND SURROUNDING AREA

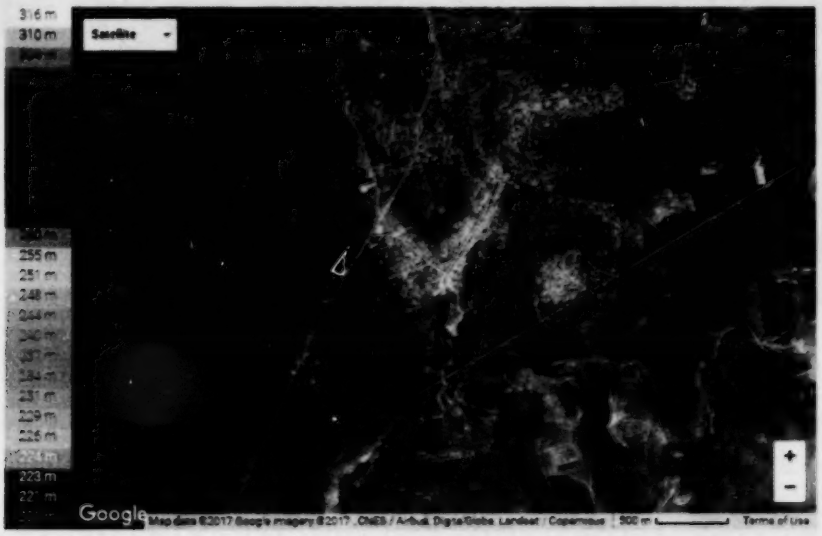
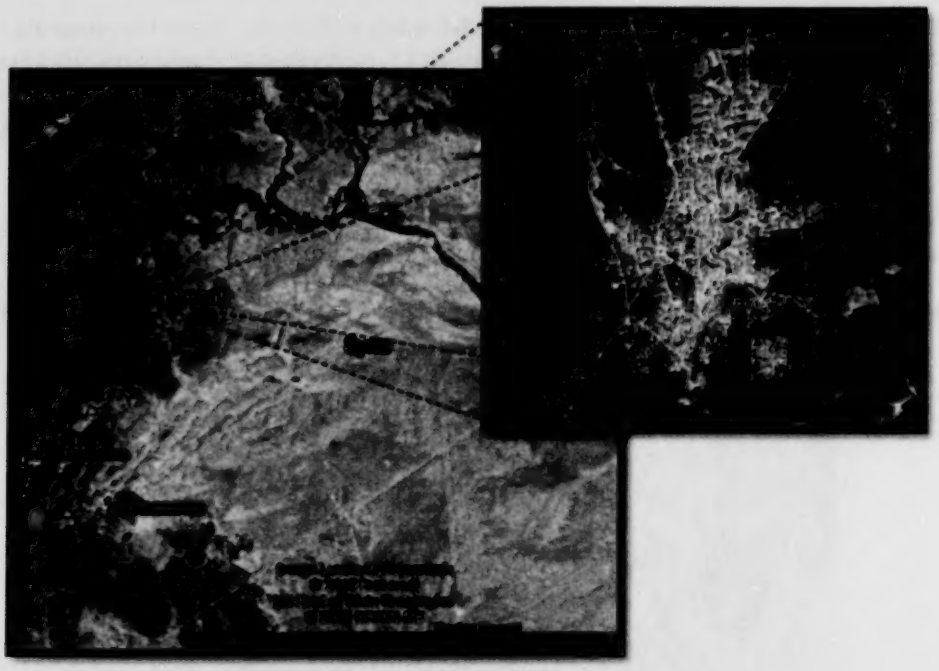


FIGURE 2: LTAMENAH AND ITS LOCATION WITHIN NORTHERN SYRIA



24 March 2017

5.7 The FFM retrieved online retrospective meteorological data on 24 March 2017 at the time of the incident. The weather information was retrieved from https://de.worldweatheronline.com.

TABLE 1: WEATHER INFORMATION FOR THE CITY OF LTAMENAH ON 24 MARCH 2017

Time	Temperature	Wind direction	Wind speed	Precipitation	Clouds	Humidity
06:00	10 °C	↖	1 m/s	0.0 mm	6%	50%

5.8 Between 28 July 2017 and 8 March 2018, inclusive, the FFM interviewed six people in person, including doctors and patients. All interviewees were male.

TABLE 2: INTERVIEWEE DETAILS

	Interviewee	Male	Female	Primary casualty	Secondary casualty
Treating physicians	1	1	0	0	0
Medical support staff	1	1	0	0	0
Witness	3	3	0	2	0
Sampler	1	1	0	0	0
Total	**6**	**6**	**0**	**2**	**0**

24 March 2017: Narrative

5.9 A witness reported being awoken on 24 March 2017 at approximately 05:45 by the sound of a plane launching at least two munitions in the southern outskirts of Ltamenah. The first munition made impact in the agricultural lands south of the city, producing a mild detonation and generating no smoke (first impact point). The second munition made impact 10 minutes later, about 100 meters south of the first impact point producing a strong detonation and smoke. Another separate witness indicated that the first munition contained a chemical that was not chlorine, and that the second one was of a more conventional nature (second impact point).

5.10 During the first few minutes following the initial detonation, people who were within a distance of 200 meters from the impact point started experiencing shortness of breath, abdominal pain, dizziness, headache, and tightness in the chest. Since several people had similar complaints, they left the area and self-reported to Ltamenah Hospital.

5.11 The Ltamenah Hospital medical personnel stated that casualties began arriving around 06:00. They presented with agitation, shortness of breath, and pinpoint pupils. After phone consultation with a physician experienced in treating chemical exposure, they were undressed, washed outside the hospital, and treated for exposure to an organophosphorus chemical. All cases were reported as mild by medical personnel.

5.12 Witnesses estimated up to 30 casualties, including women, men, and children. There were two groups of casualties: the first group consisted of two families who were sleeping in caves in the southern residential area of Ltamenah; the second group consisted of several men located in the agricultural land outside the city, close to the first impact point.

5.13 As described above, the impact location of the alleged chemical munition was approximately 200 meters east of the location of the second group affected in the agricultural lands, and southeast of the residential location of the first group. This residential area of Ltamenah was described as being a few hundred meters from the place of impact. The wind was reported to be blowing toward the northwest at the time of impact.

5.14 Casualties in the vicinity of the first impact point reported not smelling anything before the onset of symptoms. One witness who inspected the first crater described it as being about 1.5 meters in diameter by one meter in depth. Inside, there was a bubbling liquid and metal fragments.

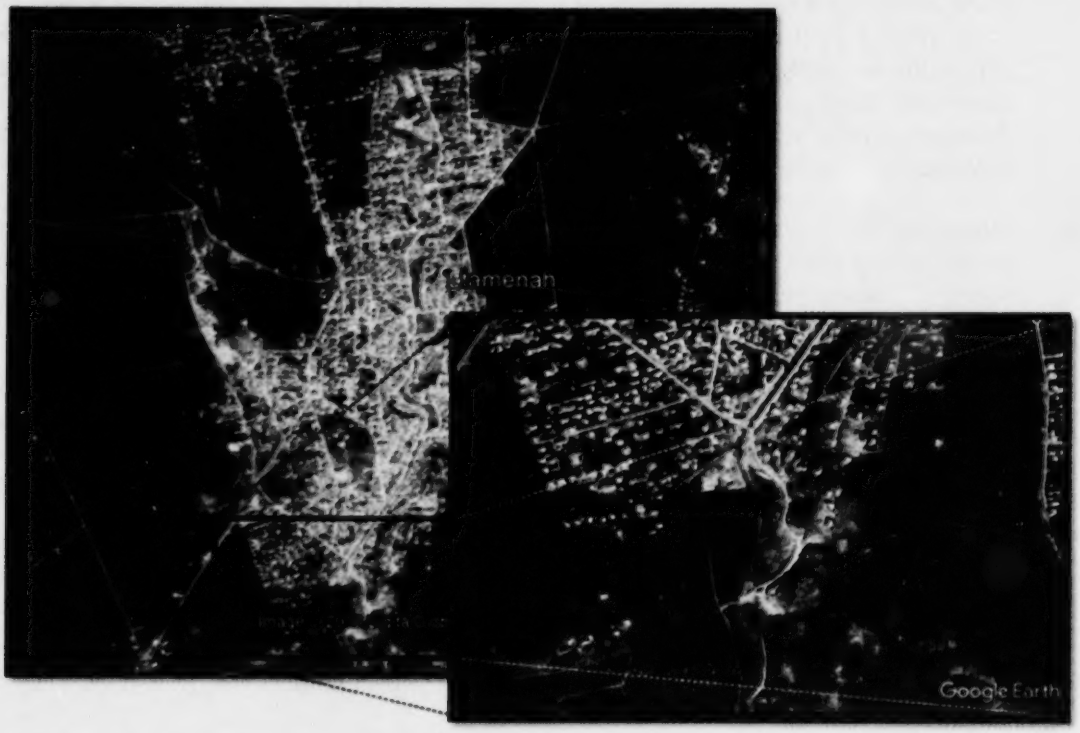
Another witness who saw the crater on the first day described the bubbling liquid as similar to water. Days later, the same crater was seen having a black bubbling liquid. According to both witnesses, a burning sensation on the skin was felt when approaching the crater and dead animals and burnt vegetation were found within 200 meters in the direction of the wind.

5.15 The crater at the second impact point was described as being of a significantly larger diameter and greater in depth. Metal fragments associated with conventional munitions were located inside.

24 March 2017: Location of alleged incident and casualties

5.16 The location of the alleged incident was in arable farmland where armed groups were stationed. A small number of agricultural workers were also present in the area at the time. The following figure shows the two impact points of munitions on 24 March 2017.

FIGURE 3: IMPACT LOCATIONS ON 24 MARCH 2017 IN SOUTH LTAMENAH



5.17 The following figure shows the location of casualties who went to Ltamenah Hospital for treatment.

FIGURE 4: LOCATION OF THE ALLEGED INCIDENT AND PRIMARY CASUALTIES

5.18 According to witnesses, all primary casualties were located both in caves close to the location of the alleged incident, and in a residential area in southern Ltamenah. One member of the medical treating staff who was interviewed also reported secondary contamination.

24 March 2017: Epidemiological analysis

Information gathered from medical personnel

5.19 The team interviewed one physician and one member of the medical support staff who worked at Ltamenah Hospital. The following is a summary of their testimony.

5.20 At approximately 06:00, casualties began arriving from a residential area in Ltamenah via civilian vehicles. The physician reported treating 16 civilians at the hospital. No hospital admission or treatment records were available at the time of the interviews and details such as age distribution and gender were not available.

5.21 Incoming patients were described as having a nonspecific irritating smell that was dissimilar to chlorine. All patients were decontaminated with water prior to entering to the emergency department.

5.22 All casualties are reported to have presented with shortness of breath, miosis, cough, oral hypersecretion, and perceived agitation. There were no reported skin, pulmonary, or vital sign abnormalities. All cases are described as being mild presentations and patients were discharged within 24 hours.

5.23 All patients received atropine with subsequent alleviation of miosis and secretions. Additionally, all patients received oxygen, bronchodilators, and corticosteroids. Two adult patients received diazepam and were transferred to another facility for continued treatment.

5.24 The medical staff had no information regarding the time of onset of physical complaints in relation to the incident.

Casualties

5.25 The team interviewed two casualties of the alleged attack. Both were asleep in a cave with five other persons and awoke when the alleged munition made impact.

5.26 Within one to five minutes after the witnesses left the cave, they described an onset of shortness of breath, headache, visual impairment, abdominal pain, dizziness, and tightness in the chest. They stated that the remaining occupants had similar physical complaints and time of onset.

5.27 Subjects alleged previous experience with chlorine exposure. They stated that this feeling was dissimilar and that there was no odour or colour that they typically associate with the alleged use of chlorine as a weapon.

5.28 Subjects self-reported to Ltamenah Hospital, where they described approximately 35 patients all with similar complaints. They stated they were treated with oxygen and an unknown medication to dilate their pupils.

5.29 Subjects had ongoing complaints of decreased visual acuity, photophobia, tightness in the chest, and shortness of breath for approximately 15 to 25 days after incident, for which they received outpatient treatment.

Onset in relation to the allegation

5.30 The following figures show patient information provided by treating medical staff, from presentation through to discharge.

FIGURE 5: PRESENTATION

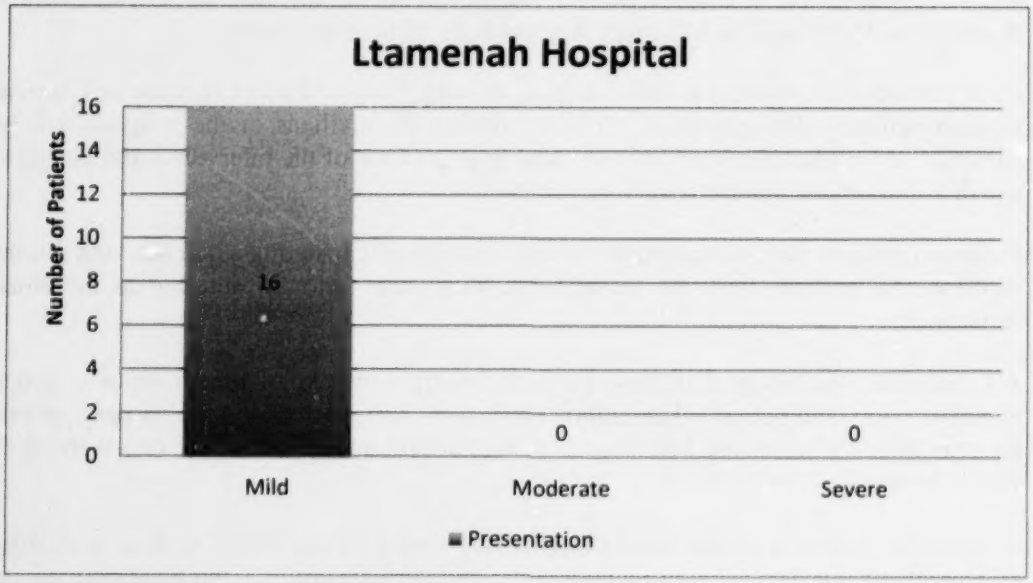


FIGURE 6: PATIENTS SIGNS AND SYMPTOMS

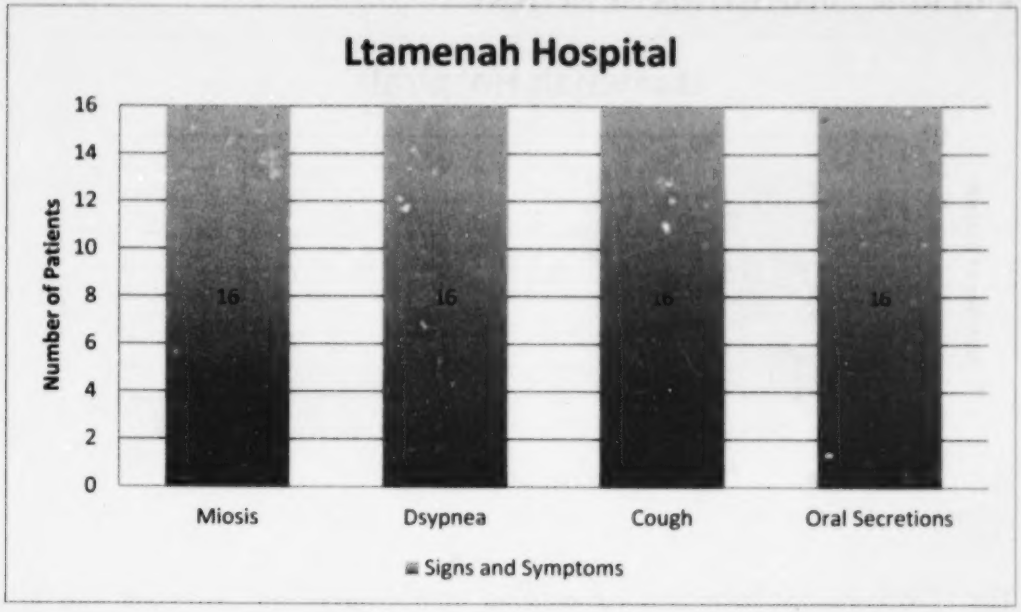


FIGURE 7: TREATMENT

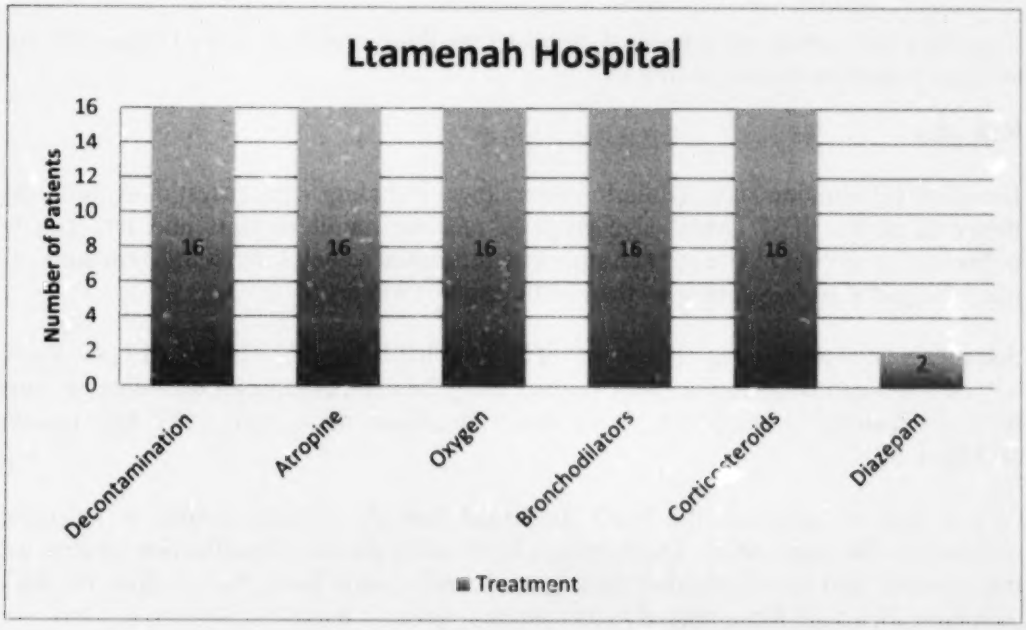
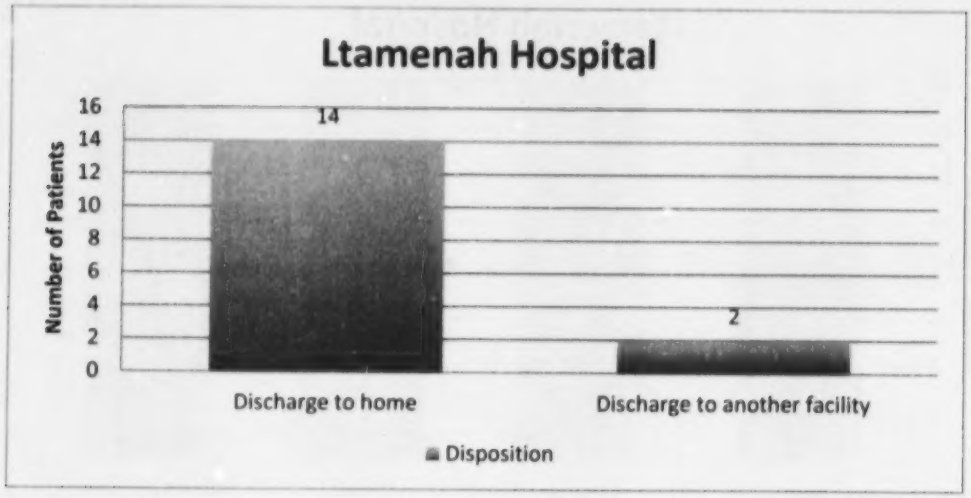


FIGURE 8: DISPOSITION OF PATIENT



5.31 The FFM requested hospital documentation from medical staff. However, due to damage sustained to the medical facility on 25 March 2017, it was not possible to provide these records and documentation. This would have allowed cross-checking and corroboration of information gathered from witness statements during interviews.

5.32 The signs and symptoms presented and their resulting response to medication are consistent with acetylcholinesterase inhibition.

Samples

5.33 Based on information supplied during interviews, including witness testimony and supporting media files, the FFM identified potentially relevant munition parts and arranged for their collection by an NGO. As a result further environmental samples, including remnants of alleged munition parts, were received by the FFM team on 19 February 2018.

5.34 Samples related to the alleged incidents of 24 March 2017 and 25 March 2017 (see below) were not analysed immediately due to the priority assigned to other samples including but not limited to those relating to the incidents in Khan Shaykhun on 4 April 2017 and Ltamenah on 30 March 2017.

5.35 At the time of handover, the NGO confirmed that all of these samples were collected by members of the same NGO. The members involved in the sample collection process were also interviewed, and they provided photographs and videos from the location of the alleged incidents, including those related to the sampling process itself.

5.36 The following table summarises the results of analyses performed by two DLs. Given the nature of some of the samples, it was not possible to split them and send them to two separate DLs. In this case, the table indicates 'Not analysed', indicating that the sample was not given to the specified DL—not that the DL chose not analyse the sample.

TABLE 3: LIST OF SAMPLES AND ANALYTICAL RESULTS FROM DESIGNATED LABORATORIES

List of Samples				Analysis Results	
N	Evidence No.	Sample Code	Description	Designated Laboratory 2	Designated Laboratory 3
1.	20180219172318	FFM/47/18/SLS18	Soil from the crater	Sarin, EIMP, DIMP, IMPA, IPMPA, Hexamine, Pyro, TPP, TEA, HFP	Sarin, DIMP, IMPA, MPA, Pyro, DIPP, TPP, DIPF, Hexamine
2.	20180219172319	FFM/47/18/SLS19	Soil from the crater	Sarin, EIMP, DIMP, IMPA, IPMPA, Hexamine, TPP, TEA, DIPF, HFP	DIMP, IMPA, MPA, DIPP, TPP, DIPF, HFP, Hexamine
3.	20180219172325	FFM/47/18/SDS25	Metal piece of munition from the crater	DIMP, IMPA	MPA
4.	20180219172328	FFM/47/18/SDS28	Metal piece of munition from the crater	DIMP, IMPA, MPA, TPP, TEA, Hexamine, HFP	Not analysed
5.	20180219172329	FFM/47/18/SDS29	Metal piece of munition from the crater	DIMP, IMPA, MPA, TPP, DIPF, Hexamine, MPFA, Pyro, TEA, HFP	Not analysed
6.	20180219172320	FFM/47/18/SLS20	Soil at 50 m	DIMP	Not analysed
7.	20180219172321	FFM/47/18/SLS21	Soil at 100m under a metal piece	DIMP, TEA	n.d.
8.	20180219172326	FFM/47/18/SDS26	Metal pieces of munition at 100m from the crater	IMPA	Not analysed
9.	20180219172323	FFM/47/18/SLS23	Soil at 150 m	n.d.	n.d.

	List of Samples			Analysis Results	
10.	20180219172322	FFM/47/18/SDS22	Soil at 150 m under a meal piece	n.d.	n.d.
11.	**20180219172327**	**FFM/47/18/SDS27**	**Metal piece of munition at 150m from the crater (11)**	**IMPA**	**Not analysed**
12.	20180219172324	FFM/47/18/SDS24	Metal piece (2)	DIMP IMPA	Not analysed

Key	
DIMP	Di-isopropyl methylphosphonate (by-product of sarin production)
DIPP	Diisopropyl phosphate
DIPF	Di-isopropyl phosphorofluoridate (by-product of sarin precursor/sarin production)
EIMP	Ethyl isopropyl methylphosphonate
Hexamine	Hexamethylentetramine
HFP	Hexafluorophosphate
IMPA	Isopropyl methylphosphonate (first degradation product of sarin)
IPMPA	Isopropyl propyl methylphosphonate
MPA	Methylphosphonic acid (degradation product of sarin and/or nerve agent precursor and/or nerve agent by-product)
MPFA	Methylphosphonofluoridic acid
n.d.	No detection of relevant chemicals (as defined by the OPCW laboratory)
Pyro	Di-isopropyl dimethylpyrophosphonate (by-product of sarin production)
TEA	Triethanolamine
TPP	Tri-isopropyl phosphate (by-product of sarin precursor/sarin production)

5.37 The FFM noted similarities between the analytes in these samples and those from previous allegations. The following table compares similar samples collected taken as part of the investigation into the use of sarin as a chemical weapon on 4 April 2017 in Khan Shaykhun, and the more than likely use of sarin as a chemical weapon on 30 March 2017, also in Ltamenah.

TABLE 4: LIST OF SAMPLES AND ANALYTICAL RESULTS FROM DESIGNATED LABORATORIES

Sample		Latamenah 24 March 2017	Latamenah 30 March 2017	Khan Shaykhun 4 April 2017
Location	**Type**	**Chemicals Reported**	**Chemicals Reported**	**Chemicals Reported**
From the crater	Soil	Sarin, DIMP, Hexamine, Pyro, IMPA, DIPP, DIPF, HFP, EIMP, IPMPA, TPP, MPA, TEA.	Sarin, DIMP, Hexamine, IMPA, iPPF, DIPP, DIPF, HFP, TPP, MPA, DBP.	Sarin, DIMP, Hexamine, Pyro, IMPA, DIPP, DIPF, HFP, TPP, MPA.
	Gravel	**N.A**	**Sarin, DIMP, IMPA, MPA.**	**Sarin, DIMP, Hexamine, IMPA, DIPP, DIPF, HFP, MPA.**
	Metal piece	DIMP, Hexamine, Pyro, IMPA, DIPF, HFP, MPFA, TPP, MPA, TEA.	Sarin, DIMP, Hexamine, Pyro, IMPA, iPPF DIPP, DIPF, HFP, MPFA, TPP, MPA, DBP, 5-ethyl-1,3-dioxane-5-methanol.	Sarin, DIMP, Hexamine, Pyro, IMPA, DIPF, EIMP, TPP.
At 50 m from the crater	**Soil**	**DIMP**	**Sarin, IMPA, MPA, DIMP.**	**Sarin, DIMP, IMPA, DIPP, DIPF, TPP, MPA.**
At 100 m from the crater	Soil	DIMP, TEA.	N.A	DIMP, IMPA.

Key	
DIMP	Di-isopropyl methylphosphonate (by-product of sarin production)
DIPF	Di-isopropyl phosphorofluoridate (by-product of sarin precursor/sarin production)
DIPP	Diisopropyl phosphate
EIMP	Ethyl isopropyl methylphosphonate
Hexamine	Hexamethylentetramine
HFP	Hexafluorophosphate
IMPA	Isopropyl methylphosphonate (first degradation product of sarin)
IPMPA	Isopropyl propyl methylphosphonate
MPA	Methylphosphonic acid (degradation product of sarin and/or nerve agent precursor and/or nerve agent by-product)
MPFA	Methylphosphonofluoridic acid
n.d.	No detection of relevant chemicals (as defined by the OPCW laboratory)

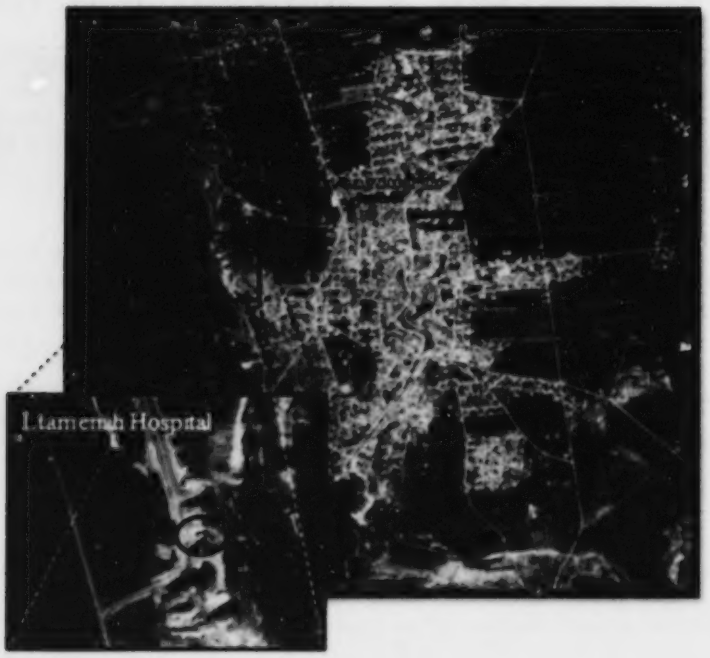
Key	
Pyro	Di-isopropyl dimethylpyrophosphonate (by-product of sarin production)
TEA	Triethanolamine
TPP	Tri-isopropyl phosphate (by-product of sarin precursor/sarin production)

25 March 2017

5.38 Ltamenah Hospital is located in the northwestern outskirts of the city of Ltamenah and is built inside a cave carved within a rock formation. This is the same hospital also referred to as Ltamenah Hospital in the allegation above on 24 March 2017.

5.39 The following figures show the relative location of the city and the hospital where the alleged incident took place.

FIGURE 9: LOCATION OF LTAMENAH HOSPITAL



5.40 Witnesses described the weather on that day as moderate temperature (20 - 25°C), no wind or low wind speed blowing in an easterly direction, a clear sky, and good visibility. The FFM retrieved online retrospective meteorological data specific for 25 March 2017 in the area at the time of the incident. The weather information was retrieved from https://darksky.net.

TABLE 5: WEATHER INFORMATION FOR THE CITY OF LTAMENAH ON 25 MARCH 2017

Time	Temperature	Wind direction	Wind speed	Precipitation	Clouds	Humidity
15:00	24°C	→	4 m/s	0.0 mm	3%	24%

5.41 Between 10 April 2017 and 8 March 2018 inclusive, the FFM interviewed 13 people in person, including medical staff, patients, and first responders—two of whom were involved in the environmental sample collection process. All interviewees were male.

TABLE 6: INTERVIEWEE DETAILS

	Interviewee	Male	Female	Primary casualty	Secondary casualty
Treating physicians	2	2	0	0	0
Medical support staff	1	1	0	0	0
Witness	7	7	0	1	0
Sampler	3	3	0	0	0
Total	**13**	**13**	**0**	**1**	**0**

25 March 2017: Narrative

5.42 At approximately 15:00 hours on 25 March 2017, a witness reported two raids carried out by helicopters in the northwestern outskirts of the city of Ltamenah. During the first raid, two barrels were dropped. Two additional barrels were dropped during the second raid, 15 minutes later. A different witness stated seeing a helicopter dropping the first two barrels. The sounds following the impacts were described as weaker detonations compared to explosive barrels.

5.43 Although witnesses refer to the items as barrels, their shape, based on description, photographs, and viewing by the FFM, is cylindrical. Thus to differentiate these barrels, alleged to be chemical, from those that are more explosive in nature, they will be referred to as cylinders in subsequent text.

5.44 One of the cylinders impacted the sand and concrete roof at the entrance to the hospital, leading directly to the Emergency Room (ER) at Ltamenah Hospital. This cylinder did not explode but pierced the concrete roof, and then fell inside the ER. Due to the impact, the head of the cylinder cracked releasing a gas inside the hospital. The gas was described by witnesses as yellow, with a pungent and irritating smell, and since the hospital was carved inside a rock formation, the gas was rapidly dispersed in the rooms of the cave.

5.45 The signs and symptoms reported by the casualties shortly after the dispersion of the gas include shortness of breath, moderate to severe cough, mucosal membrane irritation, blurred vision, lacrimation, expectoration, and vomiting. People located close to the entrance escaped immediately through the emergency exit.

5.46 At the time of the incident, Dr. Ali Darwish, Orthopaedic Surgeon, was conducting a surgical procedure with the assistance of a nurse in the Operation Room (OR), located deep inside the cave hospital. The patient was anesthetised and intubated to protect the respiratory airway.

5.47 Several sources indicated that Dr. Ali Darwish and the assistant remained inside the OR for a longer period of time. This led to significantly higher exposure to the gas compared to other hospital staff, who escaped immediately. This higher exposure is also related to the need to escape through the gas. According to accounts, the surgical patient was only mildly affected due to the previously mentioned airway protection. However, Dr. Darwish and his assistant were severely affected.

5.48 Approximately ten minutes after the incident, the initial casualties were transported to Medical Facility A (MF-A) by civilians in private vehicles. MF-A is located relatively near the site of the incident. Dr. Ali Darwish, the assistant, and the patient were rescued by the SCD and were also transported to MF-A.

5.49 According to medical records provided to the FFM by interviewees, the number of casualties was 33, including 15 Ltamenah Hospital staff. Most of them reported experiencing shortness of breath, cough, and lacrimation. Patients requiring intubation were transferred to Medical Facility B (MF-B).

5.50 Critical patients such as Dr. Ali Darwish and the assistant were immediately transferred to other hospitals. Dr. Ali Darwish died on the way to Medical Facility C (MF-C). The assistant was transferred to a hospital in a neighbouring country.

25 March 2017: Epidemiological analysis

5.51 The team interviewed two physicians, one member of medical support staff, and one casualty. One physician works at Ltamenah Hospital and one at MF-A. The following is a summary of their testimony.

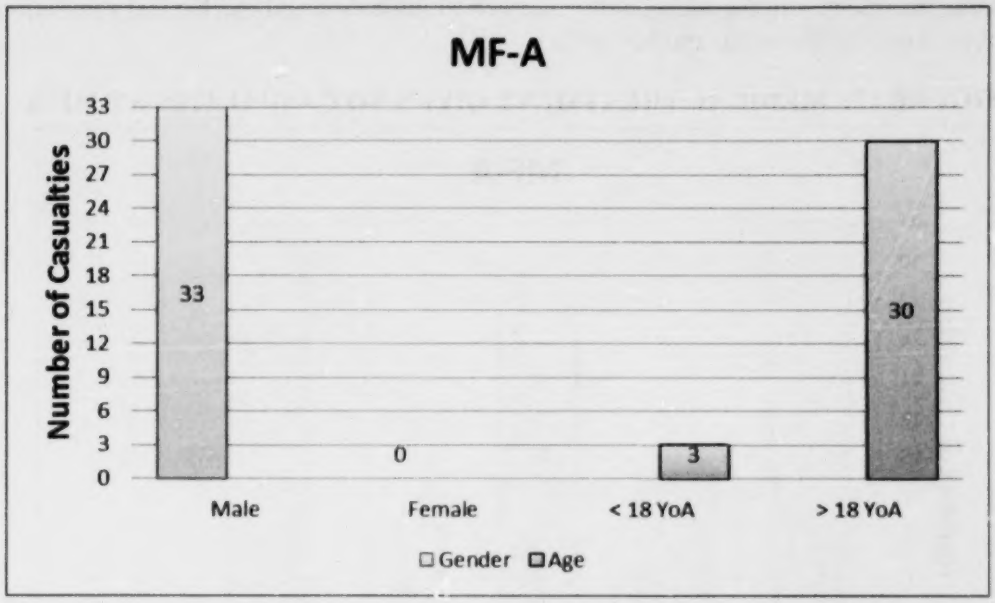
5.52 At approximately 15:00 hours, a cylinder allegedly containing chlorine struck the entrance of Ltamenah Hospital, releasing a yellow gas that smelled of detergent or household chlorine products.[1] All patients and staff—aside from the three mentioned previously—were able to immediately exit the premises.

5.53 Casualties did not receive treatment onsite but were moved to MF-A within approximately 15 minutes by ambulance and private vehicles. Upon arrival at MF-A, they were undressed and decontaminated with water. It was noted that their clothing smelled like household chlorine products.

5.54 The number of causalities reported in medical records was 33. Age, gender, complaint, treatment, and disposition were obtained from the physicians and hospital records of MF-A.

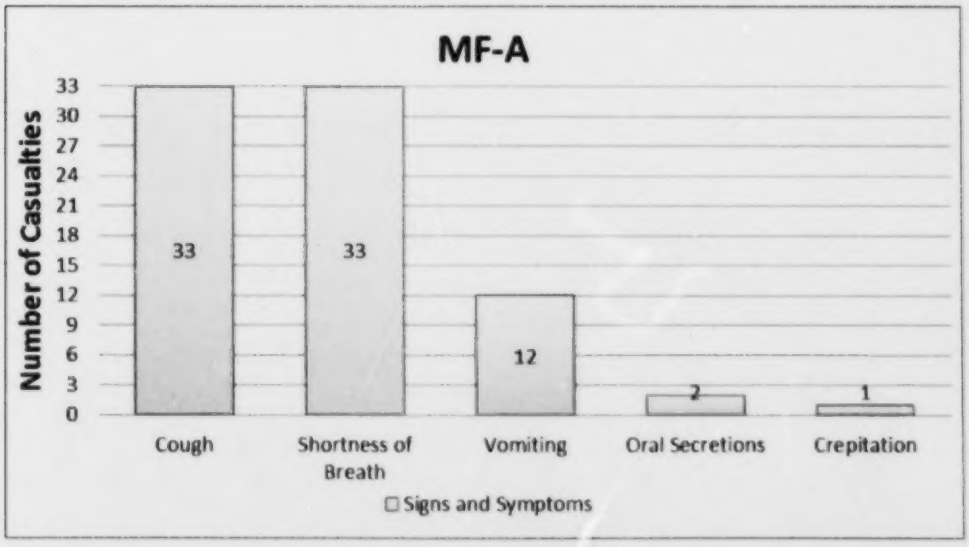
[1] The witnesses referred to a commercial household detergent called "Clor".

FIGURE 10: AGE AND GENDER DISTRIBUTION OF CASUALTIES ON PRESENTATION AT MF-A



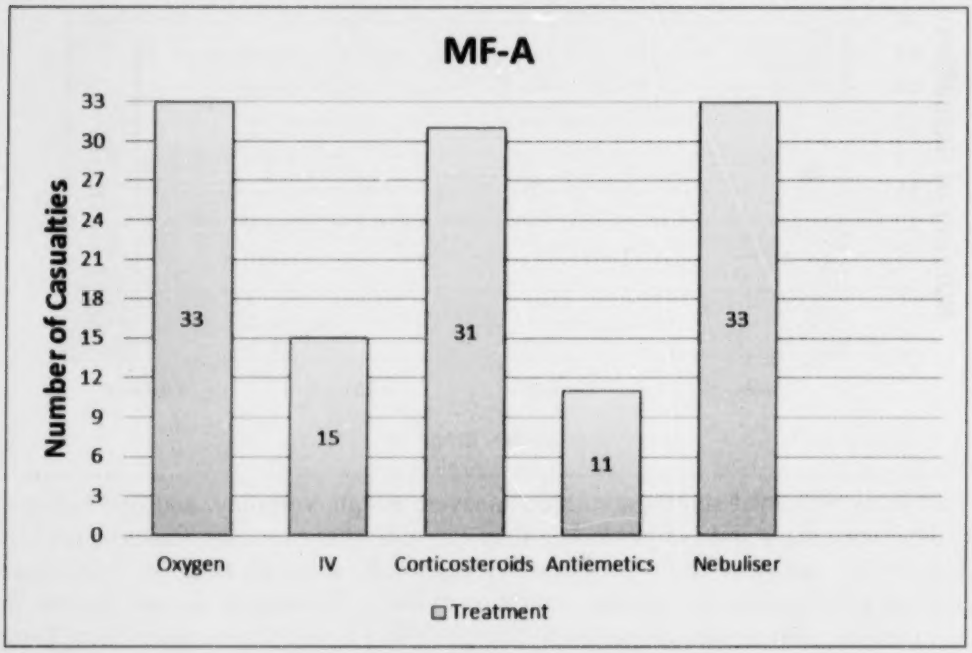
5.55 All casualties presented shortness of breath, severe cough, vomiting, and oral hypersecretion. They developed signs and symptoms less than a minute after exposure. Cases were classified as predominantly moderate with peripheral oxygen saturation of 80-85%. Nine cases were determined to be severe with oxygen saturation of 60%. Three cases did not survive, including Dr. Ali Darwish. There were no pupillary changes noted in any of the cases. Chest X-rays taken at MF-A and MF-C revealed opacity in the lungs typical of mucosal membrane damage, and consistent with inhalation of a pulmonary irritant.

FIGURE 11: SIGNS AND SYMPTOMS OF CASUALTIES ON PRESENTATION AT MF-A



5.56 Patients were treated with oxygen, intravenous (IV) fluids, bronchodilators, corticosteroids, anti-emetics, antibiotics, and in one case with atropine for secretions. Severe cases received the same treatment with the addition of endotracheal intubation and mechanical ventilation. These cases were transferred to another facility.

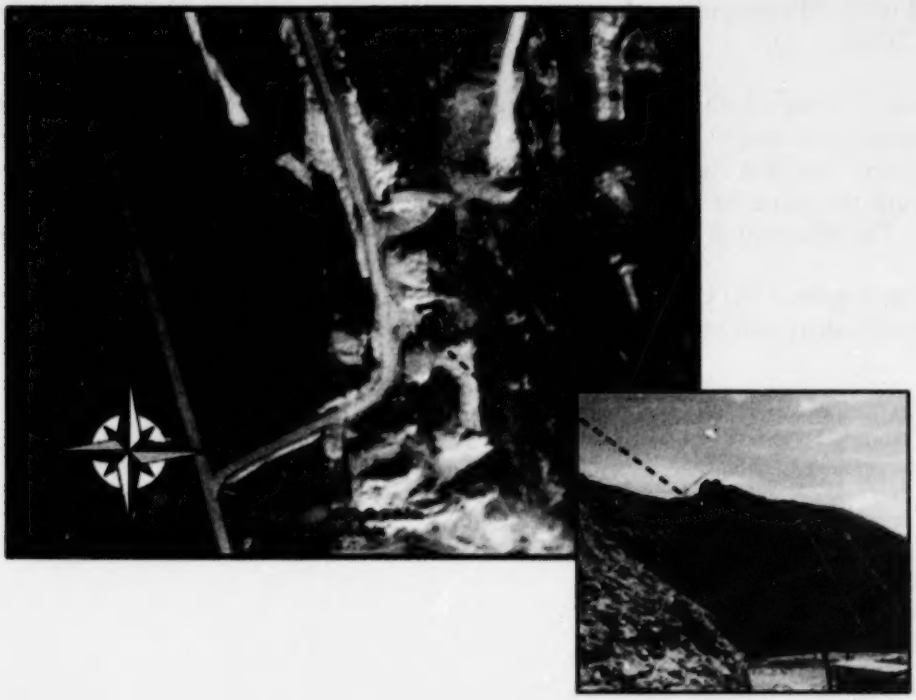
FIGURE 12: MEDICAL TREATMENT GIVEN TO CASUALTIES AT MF-A



25 March 2017: Location of alleged incident and casualties

5.57 The location of the alleged incident was adjacent to a combat zone and co-located with farming area. A small number of agricultural workers were present in the area at the time.

FIGURE 13: LOCATIONS OF IMPACT POINTS

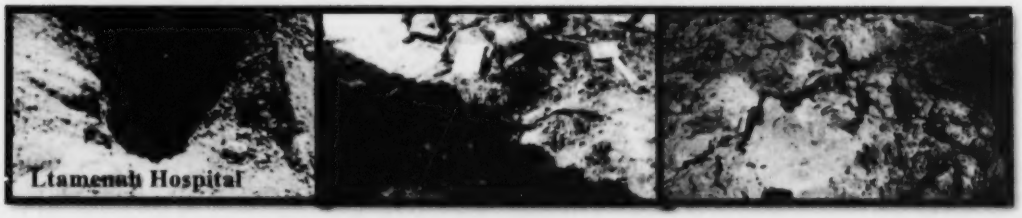


5.58 According to witness statements, all primary casualties were located inside the hospital. Interviewed medical personnel reported no secondary exposure.

5.59 The impact location of the hospital as indicated by witnesses are shown in Figure 13. The first cylinder (1) pierced the rooftop of the ER at the entrance of Ltamenah Hospital. The second cylinder, third cylinder, and fourth cylinder fell to the ground at the respective distances of approximately 50 meters northwest to the hospital, 200 meters east to the hospital, and 100 meters to 150 meters south to the hospital. Witnesses reported that vegetation appeared burnt for about 100 metres from the impact points.

5.60 Based on the analysis of the digital evidence gathered by the FFM from different sources, including witnesses, the FFM could account for three cylinders and three craters/impact points. Three of the craters/impact points are shown in Figure 14 below.

FIGURE 14: IMPACT POINTS



25 March 2017 – Environmental samples

5.61 The FFM received environmental samples and metal objects on 10 and 12 April 2017 and 19 February 2018.

5.62 At the time of handover, the team was informed that all samples were taken by the parties who maintained their custody. A member of the SCD who took the samples was present at the handover and provided information on every sample. This information was supported by interviewing the same SCD member and by photographs and videos handed over during interview. The information was corroborated by interviewing two additional SCD members

5.63 Samples were split at the OPCW Laboratory before being transported to DLs. The following table gives the analytical results from each sample

SAMPLES AND ORGANIC ANALYSIS RESULTS FROM DESIGNATED LABORATORIES

Sample					Analysis Result	
Ref	Sample From	Evidence Reference Number	Sample Code	Description	Designated Laboratory 2	Designated Laboratory 3
1.	Impact point(S)	20170410130109	06SDS	Metal fragments from the barrel remnants	n.d	2,4,6-Trinitrotoluene (TNT)
2.		20170410130110	07SLS	Soil samples from Latamneh hospital	Trichloroacetic acid	n.d
3.		20170410130111	08SLS	Soil Sample	Trichloroacetic acid	2,4,6-Trinitrotoluene (TNT)
4.		20170410130112	09SLS	Soil Sample	Trichloroacetic acid 2,2,2-Trichloroethanol	Diisopropyl methylphosphonate (DIMP)
5.		20170412135103	28AQS	Water next to 1st barrel	Trichloroacetic acid	Diisopropyl methylphosphonate (DIMP)
6.		20170412135104	29AQS	Water next to 2nd barrel	Diisopropyl methylphosphonate (DIMP)	Diisopropyl methylphosphonate (DIMP)
7.		20170412135105	30WPS	Wipe from outer barrel	n.d	n.d
8.		20170412135115	40SLS	Soil next to the 1st barrel	Trichloroacetic acid Tris(2-chloroethyl)phosphate Diisopropyl methylphosphonate 2,2,2-Trichloroethanol	Diisopropyl methylphosphonate (DIMP)
9.		20170412135116	41SLS	Mud next to the 2nd barrel	Trichloroacetic acid Pentachlorophenol 2,3,4,6-Tetrachlorophenol 2,4,6-Trichlorophenol Tris(2-chloroethyl)phosphate Diisopropyl methylphosphonate (DIMP) Chloral hydrate	Diisopropyl methylphosphonate (DIMP) 2,4,6-Trinitrotoluene (TNT)

Sample					Analysis Result	
Ref	Sample From	Evidence Reference Number	Sample Code	Description	Designated Laboratory 2	Designated Laboratory 3
10.	Inside the Hospital	20170412135101	01SDS	Dr. Ali Darwish Scrubs: Trousers	1,4-Dichlorobenzene	Diisopropyl methylphosphonate (DIMP)
11.		20170412135102	02SDS	Dr. Ali Darwish Scrubs: Shirt	1,4-Dichlorobenzene Triethanolamine	Diisopropyl methylphosphonate (DIMP)
12.		20170412135103	03SDS	Samples of casualties clothing: Hospital scrubs	1,4-Dichlorobenzene 2-Chlorophenol 2,5-Dichlorophenol 2,4,6-Trichlorophenol Benzyl chloride	Diisopropyl methylphosphonate (DIMP)
13.		20170412135111	36SDS	Blanket	Trichloroacetic acid Pentachlorophenol 2,3,4,6-Tetrachlorophenol 2,4,6-Trichlorophenol	Diisopropyl methylphosphonate (DIMP)
14.		20170412135112	37SDS	Scissors from the operation room	2,4,6-Trichlorophenol	Diisopropyl methylphosphonate (DIMP)
15.		20170412135113	38SDS	Surgical tools from the operation room	Diisopropyl methylphosphonate	Diisopropyl methylphosphonate (DIMP)
16.		20170412135114	39SDS	Clothes from the operation room	2,2,2-Trichloroethanol	N.A
17.		20180219172317	SDS17	Wooden piece from the bottom rail of the Operation Room door in Latamneh hospital	Chloroiodomethane Chloroisocyanatobenzene Dichloroacetic acid	Bornyl chloride
18.	Outside the Hospital	20170412135101	26SDS	Paper sample, 50 m away from impact point	Diisopropyl methylphosphonate (DIMP) Methyl 9,10-dichlorooctadecanoate	Diisopropyl methylphosphonate (DIMP)

Ref	Sample From	Sample: Evidence Reference Number	Sample: Sample Code	Sample: Description	Analysis Result: Designated Laboratory 2	Analysis Result: Designated Laboratory 3
						Isopropyl methylphosphonate (IPMPA)
19.		20170412135102	27SDS	Concrete, 50 m away	Trichloroacetic acid Diisopropyl methylphosphonate (DIMP) 1,3,5-Trinitrobenzene 2,4-Dinitrotoluene 2,4,6-Trinitrotoluene (TNT) 2-Amino-4,6-dinitrotoluene 4-Amino-2,6-dinitrotoluene Picric acid	Diisopropyl methylphosphonate (DIMP) Isopropyl methylphosphonate (IPMPA) 2,4,6-Trinitrotoluene (TNT)
20.		20170412135117	42SLS	Soil 50m away from 2nd barrel	Diisopropyl methylphosphonate (DIMP)	Diisopropyl methylphosphonate (DIMP)
21.		20170412135118	43SLS	Soil 150m	2,2,2-Trichloroethanol 2,4,6-Trinitrotoluene (TNT) 2-Amino-4,6-dinitrotoluene 4-Amino-2,6-dinitrotoluene	Diisopropyl methylphosphonate (DIMP)
22.	Casualties and first responder	20170410130107	04SDS	Samples of casualties clothing: Shirt	n.d	Diisopropyl methylphosphonate (DIMP)
23.		20170410130108	05SDS	Samples of casualties clothing: Shirt	Triethanolamine	Diisopropyl methylphosphonate (DIMP)
24.		20170412135119	44SDS	Civil Defence Uniform: Pants	2,4,6-Trichlorophenol	Diisopropyl methylphosphonate (DIMP)
25.		20170412135120	45SDS	Civil Defence Uniform: Jacket	Methylphosphonic acid Benzyl chloride	Diisopropyl methylphosphonate (DIMP)

SAMPLES AND INORGANIC ANALYSIS RESULTS FROM A DESIGNATED LABORATORY

Sample				Analysis Results Concentration in ppm												
Ref	Sample Description	OPCW Code	Work code	Cl^-	F^-	NO_2^-	Br^-	NO_3^-	PO_4^{3-}	SO_4^{2-}	Li^+	Na^+	NH_4^+	K^+	Ca^{2+}	Mg^{2+}
1.	Metal Fragment	06SDS	M06-E2	366	<0.2	<0.4	<1.6	<1.4	<1.8	24	<0.2	18	<6	16	193	<0.4
2.	Soil	07SLS	S07-E2	2135	<0.2	<0.4	19	42	<1.8	34	<0.2	21	12	18	1127	37
3.	Soil	08SLS	S08-E2	1898	<0.2	<0.4	31	37	<1.8	36	<0.2	43	<6	39	957	41
4.	Sol	09SLS	S09-E2	2469	<0.2	<0.4	41	43	<1.8	36	<0.2	29	12	25	1274	54
5.	Water	28AQS	W28-E0	1113	<0.2	<0.4	156	50	<1.8	44	<0.2	46	<1.2	86	620	20
6.	Water	29AQS	W29-E0	1484	<0.2	<0.4	108	51	<1.8	39	<0.2	32	<1.2	14	583	30
7.	Wipe from barrel	30WPS	E30-E0	22	<0.2	<0.4	<1.6	<1.4	<1.8	23	<0.3	13	<1.2	2.2	<2.8	<0.4
8.	Soil	40SLS	S40-E2	1709	<0.2	<0.4	93	35	<1.8	32	<0.2	28	5	12	908	45
9.	Mud (Soil)	41SLS	S41-E2	8174	<0.2	<0.4	383	73	<1.8	85	<0.2	120	20	21	4406	127
10.	Clothing	01SDS	T01-E2	992	247	<2	<8	<7	<9	1316	<1	1308	<6	11	<14	64
11.	Clothing	02SDS	T02-E2	1416	108	<2	<8	<7	<9	<9	<1	941	<6	11	<14	64
12.	Clothing	03SDS	T03-E2	627	1	<2	<8	<7	<9	<9	<1	204	<6	11	<14	64
13.	Blanket	36SDS	T36-E2	7496	1	<2	<8	<7	<9	<9	<1	402	<6	11	4140	<2
14.	Part of Scissors	37SDS	E37-E0	27	<0.2	<0.4	<1.6	<1.4	<1.8	22	<0.2	8	<3	2.2	<2.8	<0.4
15.	Metal object	38SDS	E38-E0	423	<0.2	<0.4	<1.6	<1.4	<1.8	<1.8	<0.2	15	12	39	11	<0.4
16.	Clothing	39SDS	N.A	N.A	N.A	N.A	N.A	N.A	N.A	N.A	N.A	N.A	N.A	N.A	N.A	N.A
17.	Wood from Door	SDS17	V17-E2	340	18	21	<8	140	<8.9	140	<1.4	340	29	79	150	9
18.	Paper	26SDS	M26-E2	1821	11	92	26	273	<9	524	<1	1327	<6	11	263	<2
19.	Concrete	27SDS	S27-E2	10526	<0.2	<0.4	720	89	<1.8	251	<0.2	242	<1	581	<2.8	6

Sample				Analysis Results Concentration in ppm												
Ref	Sample Description	OPCW Code	Work code	Cl^-	F^-	NO_2^-	Br^-	NO_3^-	PO_4^{3-}	SO_4^{2-}	Li^+	Na^+	NH_4^+	K^+	Ca^{2+}	Mg^{2+}
20.	Soil	42SLS	S42-E2	87	<0.2	<0.4	<1.6	36	<1.8	72	<0.2	36	<1.2	3	62	5
21.	Soil	43SLS	S43-E2	25	<0.2	<0.4	<1.6	56	<1.8	33	<0.2	11	<1.2	2.2	39	1
22.	Clothing	04SDS	T04-E2	1112	<1	<2	<8	<7	<9	1735	<1	1263	<6	11	<14	159
23.	Clothing	05SDS	T05-E2	90	135	<2	<8	<7	<9	<9	<1	500	<6	11	<14	<2
24.	Clothing (Sub-Sample) B	44SDS	T44BE2	1866	<1	92	<8	293	382	1549	2	1485	115	389	<14	<2
	Clothing (Sub-Sample) M		T44M-E2	2464	2479	921	<8	2660	<9	2320	22	456	79	110	2633	20
	Clothing (Sub-Sample) S		T44S-E2	2906	1158	92	126	290	366	1510	<1	1459	122	384	1104	<2
25.	Clothing	45SDS	T45-E2	1252	181	<2	<8	<7	<9	916	<1	1069	<6	11	<14	96
B01	System Blank	N.A	SBK-E2	12	<0.2	<0.4	<1.6	<1.4	<1.8	<1.8	<0.2	4	<1.2	2.2	<2.8	<0.4
B02	System Blank (H_2O)	N.A	WBK-E0	<0.2	<0.2	<0.4	<1.6	<1.4	<1.8	<1.8	<0.2	<1	<1.2	2.2	<2.8	<0.4
B03	System Blank (H_2O/Acetone 1:1)	N.A	EBK-E0	0.2	<0.2	<0.4	<1.6	<1.4	<1.8	<1.8	<0.2	<1	<1.2	2.2	<2.8	<0.4
B04	System Blank (D_2O)	N.A	TBK-E2	67	<1	<2	<8	<7	<9	<9	<1	<1	<6	11	<14	<2

6. CONCLUSIONS

6.1 As with other allegations investigated by the FFM, the team was not able to visit secured sites immediately after the alleged incidents. The potential for access was made more difficult as the areas were predominantly military areas with ongoing conflict prior to the alleged incident through to the time this report was being drafted. The team therefore relied on: the testimony of interviewees, samples as made available by the interviewees, and limited hospital records.

6.2 Through interviews and review of video evidence supplied at interview, the FFM was able to determine that environmental samples, including metal parts, were retrieved from the sites of the respective allegations.

6.3 With regard to the alleged incident of 24 March 2017 in Ltamenah, the FFM had limited access to associated medical records and was unable to visit hospitals that may have admitted patients. The limited number of interviewees gave a consistent narrative of the incident, reported medical signs and symptoms, and the way in which samples were collected. The FFM was able to place witnesses at the site at the time and corroborate their medical assessment. Based on these factors, the FFM determined that 16 people displayed signs and symptoms—and resulting response to medication—consistent with acetylcholinesterase inhibition.

6.4 With respect to the same alleged incident, sample analysis results showed the presence of sarin and other chemicals, including potential impurities and breakdown products related to sarin. The FFM further noted that the results were consistent with those from the incident in Khan Shaykhun on 4 April 2017 where sarin was used, and the incident in Ltamenah on 30 March 2017, where sarin was likely used as a chemical weapon.

6.5 With regard to the alleged incident of 25 March 2017 in northwestern Ltamenah, while the FFM was unable to visit hospitals that may have admitted patients, the team were able to review hospital records and interview medical staff who provided treatment. Interviewees gave a consistent narrative of the incident, reported medical signs and symptoms, and the way in which samples were collected. The FFM was able to place witnesses at the site at the time and corroborate their medical assessment. Based on these factors, the FFM determined that 33 people displayed medical signs and symptoms associated with exposure to a chemical that primarily irritates tissue in the eyes, nose, throat, and lungs.

6.6 Also, with respect to the same alleged incident, analysis results from samples showed the presence of elevated levels of chloride. The FFM further notes the presence of chemicals that may be related to sarin. In the absence of information to the contrary, the FFM does not attribute the presence of these chemicals to this alleged incident, but instead determines their presence as being related to the very likely use of sarin the day before, and the decontamination of patients at this location.

6.7 The findings of the FFM in relation to these two incidents are as follows.

6.8 The FFM concludes that sarin was very likely used as a chemical weapon in the south of Ltamenah on 24 March 2017.

6.9 The FFM determined that chlorine was released from cylinders through mechanical impact. The FFM concluded that chlorine was very likely used as a chemical weapon at Ltamenah hospital and the surrounding area on 25 March 2017.

Annexes (English only):

Annex 1:Reference Documentation

Annex 2:Open Sources

Annex 3:Evidence Obtained by the FFM

Annex 1

REFERENCE DOCUMENTATION

	Document Reference	Full title of Document
1.	QDOC/INS/SOP/IAU01 (Issue 1, Revision 1)	Standard Operating Procedure for Evidence Collection, Documentation, Chain-of-Custody and Preservation during an Investigation of Alleged Use of Chemical Weapons
2.	QDOC/INS/WI/IAU05 (Issue 1, Revision 2)	Work Instruction for Conducting Interviews during an Investigation of Alleged Use
3.	QDOC/INS/SOP/IAU02 (Issue 1, Revision 0)	Standard Operating Procedure Investigation of Alleged Use (IAU) Operations
4.	QDOC/INS/SOP/GG011 (Issue 1, Revision 0)	Standard Operating Procedure for Managing Inspection Laptops and other Confidentiality Support Materials
5.	QDOC/LAB/SOP/OSA2 (Issue 1, Revision 2)	Standard Operating Procedure for Off-Site Analysis of Authentic Samples
6.	QDOC/LAB/WI/CS01 (Issue 1, Revision 2)	Work Instruction for Handling of Authentic Samples from Inspection Sites and Packing Off-Site Samples at the OPCW Laboratory
7.	QDOC/LAB/WI/OSA3 (Issue 2, Revision 1)	The chain of custody and documentation for OPCW samples on-site
8.	QDOC/LAB/WI/OSA4 (Issue 1, Revision 3)	Work Instruction for Packing of Off-Site Samples

Annex 2

OPEN SOURCES

Open source internet links related to the Al Lataminah incident
• http://acloserlookonsyria.shoutwiki.com/wiki/Alleged_Chemical_Attacks,_March_25-April_3,_2017 • http://eaworldview.com/2017/03/syria-daily-the-battle-for-qomhana-in-hama-province/#latamneh • http://libyancivilwar.blogspot.nl/2017/03/syria-chlorine-allegations-march-25.html • http://syria.liveuamap.com/en/2017/25-march-drshajulislam-patients-and-doctors-dying-from-gas • http://syriadirect.org/news/surgeon-killed-dozens-injured-in-suspected-north-hama-%E2%80%98chlorine-gas%E2%80%99-attack/ • http://www.shaam.org/news/syria-news/%D8%A7%D9%84%D9%85%D8%B1%D9%88%D8%AD%D9%8A%D8%A7%D8%AA-%D8%AA%D9%82%D8%B5%D9%81-%D9%85%D8%B4%D9%81%D9%89-%D8%A7%D9%84%D9%84%D8%B7%D8%A7%D9%85%D9%86%D8%A9-%D8%A8%D9%80-%D8%A7%D9%84%D9%83%D9%84%D9%88%D8%B1-%D8%A7%D9%84%D8%B3%D8%A7%D9%85-%D9%88%D8%A7%D8%B3%D8%AA%D8%B4%D9%87%D8%A7%D8%AF-%D8%A7%D9%84%D8%B7%D8%A8%D9%8A%D8%A8-%D8%B9%D9%84%D9%8A-%D8%A7%D9%84%D8%AF%D8%B1%D9%88%D9%8A%D8%B4-%D8%A7%D8%AE%D8%AA%D9%86%D8%A7%D9%82%D8%A7.html • http://www.shaam.org/news/syria-news/الدرويش-علي-الطبيب-واستشهاد-السام-الكلور-به-اللطامنة-مشفى-تقصف-المر رحيات-اختناقا.html • https://shamna-news.com/?p=7543 • https://syrianpc.com/فصف-على-مشفى-اللطامنة-بريف-حماة-الشمال/ • https://twitter.com/DrShajulIslam/status/845694091958648832 • https://twitter.com/Ibrahimmohamd/status/845695286559289344 • https://twitter.com/SyriaCivilDef/status/845712375462420480/photo/1?ref_src=twsrc%5Etfw&ref_url=https%3A%2F%2Fwww.bellingcat.com%2Fnews%2Fmena%2F2017%2F10%2F09%2Fsummary-open-source-evidence-march-25th-2017-chlorine-attack-al-lataminah-hama%2F • https://twitter.com/ZouhirAlShimale/status/845736156402716672 • https://www.bellingcat.com/news/mena/2017/10/09/summary-open-source-evidence-march-25th-2017-chlorine-attack-al-lataminah-hama/ • https://www.enabbaladi.net/archives/139017 • https://www.youtube.com/watch?v=ArZOQOlhswc&feature=youtu.be • https://www.youtube.com/watch?v=blqik-GJzcM • https://www.youtube.com/watch?v=qSDRyOSdU6I • https://www.youtube.com/watch?v=RpA07JqCrMY

Annex 3

EVIDENCE OBTAINED BY THE FFM

The table below summarises the list of physical evidence collected from various sources by the FFM. It is split into electronic evidence stored in electronic media storage devices such as USB sticks and micro SD cards, hard copy evidence and samples. Electronic files include audio-visual captions, still images and documents. Hardcopy files consist of various documents including drawings made by witnesses. The table also shows the list of samples collected from various sources including; environmental samples including gravel and soil and other samples including metal pieces and fragments.

TABLE 1: PHYSICAL EVIDENCE COLLECTED BY THE TEAM

Entry Number	Evidence description	Evidence reference number	Evidence source
Electronic and hard copy files and documents			
1.	Kingston 16GB SD Card - Video recording	20170410130101	Handed over by 1301
2.	Kingston 4GB µSD Card - Audio recording	20170410130102	Handed over by 1301
3.	Admittance papers – 33 pages	20170410130103	Handed over by 1301
4.	Kingston 8GB µSD Card - 4 videos, 15 photos	20170410130104	Handed over by 1301
5.	Kingston 16GB SD Card and 32 32GB µSD Card - Video recordings	20170728139201	Handed over by 1392
6.	Kingston 32GB µSD Card - Audio recording	20170728139202	Handed over by 1392
7.	Kingston 16GB SD Card - 1 pdf files	20170728139203	Handed over by 1392
8.	Drawing – 1 page	20170728139204	Handed over by 1392
9.	Kingston 16GB SD Card - Video recordings	20170812139601	Handed over by 1396
10.	Kingston 4GB µSD Card - Audio recording	20170812139602	Handed over by 1396
11.	Kingston 32GB µSD Card – 54 files	20170812139603	Handed over by 1396
12.	Drawing – 1 page	20170812139603	Handed over by 1396
13.	Kingston 32GB µSD Card - Video recording	20170729139801	Handed over by 1398

Entry Number	Evidence description	Evidence reference number	Evidence source
14.	Kingston 32GB µSD Card - Audio recording	20170729139802	Handed over by 1398
15.	Drawing – 1 page	20170729139803	Handed over by 1398
16.	Kingston 16GB SD Card - Video recording	20170729139901	Handed over by 1399
	Samples		
1	Dr. Ali Darwish Scrubs: Trousers	20170410130104	Handed over by 1301
2	Dr. Ali Darwish Scrubs: Shirt	20170410130105	Handed over by 1301
3	Samples of chlorine casualties clothing: Hospital scrubs	20170410130106	Handed over by 1301
4	Samples of chlorine casualties clothing: Shirt	20170410130107	Handed over by 1301
5	Samples of chlorine casualties clothing: Shirt	20170410130108	Handed over by 1301
6	Metal fragments from the barrel remnants	20170410130109	Handed over by 1301
7	Soil samples from Latamneh hospital	20170410130110	Handed over by 1301
8	Soil Sample	20170410130111	Handed over by 1301
9	Soil Sample	20170410130112	Handed over by 1301
10	Paper sample, 50m away from impact point	20170412135101	Syria Civil Defence
11	Concrete, 50m away	20170412135102	Syria Civil Defence
12	Water next to barrel	20170412135103	Syria Civil Defence
13	Water next to barrel	20170412135104	Syria Civil Defence
14	Wipe from outer barrel	20170412135105	Syria Civil Defence
15	Blanket	20170412135111	Syria Civil Defence
16	Scissors from operation room (Sharp Object)	20170412135112	Syria Civil Defence
17	Surgical tools from operation room (Sharp Objects)	20170412135113	Syria Civil Defence

Entry Number	Evidence description	Evidence reference number	Evidence source
18	Clothes from OR, 150m away	20170412135114	Syria Civil Defence
19	Soil from next to the barrel	20170412135115	Syria Civil Defence
20	Mud next to the 2nd barrel	20170412135116	Syria Civil Defence
21	Soil 50m away from 2nd barrel	20170412135117	Syria Civil Defence
22	Soil 150m	20170412135118	Syria Civil Defence
23	Civil Defence Uniform: Pants	20170412135119	Syria Civil Defence
24	Civil Defence Uniform: Jacket	20170412135120	Syria Civil Defence

TABLE 2: ELECTRONIC EVIDENCE COLLECTED BY THE TEAM

Interview Number	Folder Location	File Names			
1301	D:\ 1301\Evidence1301	WhatsApp Image 2017-04-10 at 15.30.02 (1)		WhatsApp Image 2017-04-10 at 15.30.08 (1)	
		WhatsApp Image 2017-04-10 at 15.30.02		WhatsApp Image 2017-04-10 at 15.30.08	
		WhatsApp Image 2017-04-10 at 15.30.03 (1)		WhatsApp Image 2017-04-10 at 15.30.10 (1)	
		WhatsApp Image 2017-04-10 at 15.30.03		WhatsApp Image 2017-04-10 at 15.30.10	
		WhatsApp Image 2017-04-10 at 15.30.04		WhatsApp Image 2017-04-10 at 15.30.11	
		WhatsApp Image 2017-04-10 at 15.30.05		WhatsApp Video 2017-04-10 at 15.30.09 (1)	
		WhatsApp Image 2017-04-10 at 15.30.06 (1)		WhatsApp Video 2017-04-10 at 15.30.09	
		WhatsApp Image 2017-04-10 at 15.30.06		WhatsApp Video 2017-04-10 at 15.30.11	
		WhatsApp Image 2017-04-10 at 15.30.07 (1)		WhatsApp Video 2017-04-10 at 16.08.06	
		WhatsApp Image 2017-04-10 at 15.30.07			
1392	D:\1392\1392 Evidence	(تقرير صادر عن مديرية صحة حماه حول استهداف مشفى اللطامنة بغاز الكلور 25-3-2017 (1			
1396	D:\1396\1396 Evidence\Removable Disk	link on you (filename)			
	D:\1396\1396 Evidence\Removable Disk\ كيماوي مشفى اللطامنة صور +فيديوهات	أخبار عربية - إشتباه (5) باستخدام الكيمياوي ضد مستشفى اللطامنة في #حماة - YouTube	شهادة احد المصابين الذين كانو بالمشفى	صور لكادر المشفى والبراميل داخل المشفى التي (تحوي غاز الكلور (14	صور لكادر المشفى والبراميل داخل المشفى التي (تحوي غاز الكلور (27
		عشرات الإصابات (5) جراء قصف بالغازات السامة - على مدينة اللطامنة بحماة YouTube	صور لكادر المشفى والبراميل داخل المشفى التي (تحوي غاز الكلور (1	صور لكادر المشفى والبراميل داخل المشفى التي (تحوي غاز الكلور (15	صور لكادر المشفى والبراميل داخل المشفى التي (تحوي غاز الكلور (28
		لحظة إلقاء الطيران (5) المروحي براميل غاز الكلور على مشفى اللطامنة - وخروجه عن الخدمة YouTube	صور لكادر المشفى والبراميل داخل المشفى التي (تحوي غاز الكلور (2	صور لكادر المشفى والبراميل داخل المشفى التي (تحوي غاز الكلور (16	صور لكادر المشفى والبراميل داخل المشفى التي (تحوي غاز الكلور (29
		للمرة الثالثة على (5) التوالي طيران النظام يقصف بغاز الكلور بلدة اللطامنة YouTube - بريف حماة	صور لكادر المشفى والبراميل داخل المشفى التي (تحوي غاز الكلور (3	صور لكادر المشفى والبراميل داخل المشفى التي (تحوي غاز الكلور (17	صور لكادر المشفى والبراميل داخل المشفى التي (تحوي غاز الكلور (30

Interview Number	Folder Location	File Names			
		نافذة تفاعلية .. طائرات النظام تستهدف مدينة اللطامنة بريف حماة بمواد كيميائية - YouTube(1) (5)	صور لكادر المشفى والبراميل داخل المشفى التي (تحوي غاز الكلور (4	صور لكادر المشفى والبراميل داخل المشفى التي (تحوي غاز الكلور (18	صور لكادر المشفى والبراميل داخل المشفى التي (تحوي غاز الكلور (31
		نظام الأسد يقصف المدنيين بريف حماة بغاز كيماوي سام أعراضه شديدة و يعمل على ارتخاء الأعصاب - YouTube (5)	صور لكادر المشفى والبراميل داخل المشفى التي (تحوي غاز الكلور (5	صور لكادر المشفى والبراميل داخل المشفى التي (تحوي غاز الكلور (19	صور لكادر المشفى والبراميل داخل المشفى التي (تحوي غاز الكلور (32
		IMG-20170330-WA0112	صور لكادر المشفى والبراميل داخل المشفى التي (تحوي غاز الكلور (6	صور لكادر المشفى والبراميل داخل المشفى التي (تحوي غاز الكلور (20	صور لكادر المشفى والبراميل داخل المشفى التي (تحوي غاز الكلور (33
		IMG-20170330-WA0115	صور لكادر المشفى والبراميل داخل المشفى التي (تحوي غاز الكلور (7	صور لكادر المشفى والبراميل داخل المشفى التي (تحوي غاز الكلور (21	صور لكادر المشفى والبراميل داخل المشفى التي (تحوي غاز الكلور (34
		IMG-20170330-WA0116	صور لكادر المشفى والبراميل داخل المشفى التي (تحوي غاز الكلور (8	صور لكادر المشفى والبراميل داخل المشفى التي (تحوي غاز الكلور (22	صور لكادر المشفى والبراميل داخل المشفى التي (تحوي غاز الكلور (35
		VID-20170324-WA0053	صور لكادر المشفى والبراميل داخل المشفى التي (تحوي غاز الكلور (9	صور لكادر المشفى والبراميل داخل المشفى التي (تحوي غاز الكلور (23	صور لكادر المشفى والبراميل داخل المشفى التي (تحوي غاز الكلور (36
		VID-20170324-WA0056	صور لكادر المشفى والبراميل داخل المشفى التي (تحوي غاز الكلور (10	صور لكادر المشفى والبراميل داخل المشفى التي (تحوي غاز الكلور (24	(كادر المشفى المصاب (1
		VID-20170330-WA0097	صور لكادر المشفى والبراميل داخل المشفى التي (تحوي غاز الكلور (11	صور لكادر المشفى والبراميل داخل المشفى التي (تحوي غاز الكلور (25	(كادر المشفى المصاب (2
		VID-20170330-WA0099	صور لكادر المشفى والبراميل داخل المشفى التي (تحوي غاز الكلور (12	صور لكادر المشفى والبراميل داخل المشفى التي (تحوي غاز الكلور (26	(كادر المشفى المصاب (3
		تقرير مشفى اللطامنة قصفه بغاز الكلور	صور لكادر المشفى والبراميل داخل المشفى التي (تحوي غاز الكلور (13		